

What Is Claimed Is:

1. A method for producing cardiomyocytes in a heart of an individual in need thereof, comprising:

5

administering intravenously to said individual a cardiomyocyte producing amount of mesenchymal stem cells in at least 20 μ l and up to about 150 ml of a suspension containing 10-40X10⁶ mesenchymal stem cells/ml.

10 2. The method of Claim 1 wherein said individual is administered from 40 ml to 150 ml of a suspension containing 10-40x10⁶ mesenchymal stem cells/ml.

3. The method of Claim 1 wherein said mesenchymal stem cells are allogeneic to the individual.

15

4. A method of improving ventricular wall motion of the heart of an individual, comprising:

administering to said individual a cardiomyocyte producing
20 amount of mesenchymal stem cells.

5. The method of Claim 4 wherein said mesenchymal stem cells are administered directly to at least one damaged portion of heart tissue.

25 6. The method of Claim 5 wherein the mesenchymal stem cells are administered by injection.

7. The method of Claim 6 wherein the mesenchymal stem cells are administered in a pharmaceutically acceptable liquid injectable carrier.

30

8. The method of Claim 5 wherein the mesenchymal stem cells are administered during an open surgical procedure.

9. The method of Claim 8 wherein the mesenchymal stem cells are administered by injection.

10. The method of Claim 4 wherein the mesenchymal stem cells are administered intravenously.

11. The method of Claim 4 wherein the mesenchymal stem cells are allogeneic to the individual.

12. A method of repairing or regenerating blood vessels of the heart of an individual, comprising:
administering to said individual mesenchymal stem cells in an amount effective to repair or regenerate blood vessels in the heart of said individual.

13. The method of Claim 12 wherein said mesenchymal stem cells are administered directly to the heart.

14. The method of Claim 13 wherein said mesenchymal stem cells are administered by injection.

15. The method of Claim 14 wherein the mesenchymal stem cells are administered in a pharmaceutically acceptable liquid injectable carrier.

16. The method of Claim 12 wherein said mesenchymal stem cells are allogeneic to the individual.

17. A method of stimulating or promoting angiogenesis in the heart of an individual, comprising:
administering to said individual mesenchymal stem cells in an amount effective to stimulate or promote angiogenesis in the heart of said individual.

18. The method of Claim 17 wherein said mesenchymal stem cells are administered directly to the heart.

19. The method of Claim 18 wherein said mesenchymal stem cells are administered by injection.

20. The method of Claim 19 wherein said mesenchymal stem cells are administered in a pharmaceutically acceptable liquid injectable

carrier.

21. The method of Claim 17 wherein said mesenchymal stem cells are allogeneic to the individual.